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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/811,660	03/19/2001	Akiteru Takatsuka	36856.447	9407

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Keating & Bennett LLP
10400 Eaton Place, Suite 312
Fairfax, VA 22030

EXAMINER	
DOUGHERTY, THOMAS M	

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 05/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/811,660	TAKATSUKA ET AL.	
	Examiner	Art Unit	
	Thomas M. Dougherty	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 7-9, 13-15 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 5,424,602) in view of Lejeune (US 6,269,326). Sato shows (figs. 38A-D) a method for selecting a piezoelectric transformer having a desired characteristic, comprising the steps of: connecting a primary-side driving section of a piezoelectric transformer (TR) to a high-frequency generator (f) while leaving a secondary-side generating section thereof in an open state (e.g. figs. 38B, 38D) or in a short circuited state (e.g. 38A, 38C); causing said high-frequency generator to sequentially generate and weep a high-frequency signal over a predetermined frequency range (4.58 MHz to 5.08Mhz); measuring a resonant frequency (e.g. 1.835 MHz) or a resonant resistance (1.38 ohms) or both from an input-impedance-versus-frequency characteristic of the piezoelectric transformer (TR); selecting the piezoelectric transformer (TR) based on the value of the measured resonant frequency. The transformer in every figure is in an isolated state in which it is not mounted on a mounting substrate. Only the input-impedance-versus-frequency characteristic piezoelectric transformer is measured. Sato further shows a completing of the manufacturing of the piezoelectric transformer in figures 30(A) and 30(B). Note in these

figures that the transformer is placed on a substrate and connected to it via lands (60a), further a cap (103) is placed on the device. In contradistinction to the applicants' contention in the REMARKS/ARGUMENTS that Sato et al. "clearly fails to teach or suggest the step of 'completing the manufacturing of the piezoelectric transformer after the steps of selecting and rejecting' " is thus incorrect. The Applicants' further contend that Sato merely measures the characteristics of the piezoelectric transformer after the piezoelectric transformer has been manufactured. However, *in arguendo*, if that is correct, the figures relied upon regarding this, 38A-D, still show the testing of the device before it is mounted, thus a clear suggestion is made to do so.

Lejeune shows a testing procedure for electronic components in his figure 2 and he notes at col. 2, lines 25-27, that measured values are compared with typical values in order to accept or reject the components as a function of this comparison. He doesn't provide what specific components are to be tested. It would have been obvious to one having ordinary skill in the art to employ such a testing methodology in the selection process of Sato, such as is taught by Lejeune, at the time of the Sato invention in order to prevent components which fail quality testing from being provided to users. Moreover, such testing is typical in manufacturing and is a typical part of quality control, to employ such involves no inventive step.

Claims 4-6, 10-12, 16-18 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 5,424,602) and Lejeune (US 6,269,326) in view of Onishi et al. (JP 2000-216450). Given the combined invention of Sato et al. and Lejeune as noted above, it is not noted by them that they measure or determine the

bandwidth of an input-impedance-versus-frequency characteristic of the piezoelectric transformer by subtracting a resonant-frequency fr from an anti-resonant frequency fa and selecting the characteristic of the piezoelectric transformer based on the value of the measured bandwidth. Onishi et al. note (see solution) a method for selecting a piezoelectric transformer characteristic, comprising the steps of: connecting (e.g. see fig. 1) a primary-side driving section of a piezoelectric transformer (2) to a high-frequency generator (E); causing said high-frequency generator to sequentially generate and sweep a high-frequency signal over a predetermined frequency range; measuring a resonant frequency (fr) or a resonant resistance (see |Y| of gig. 2 which is inverse of impedance) or both of an input-impedance-versus-frequency characteristic of the piezoelectric transformer (2); they measure or determine the bandwidth of an input-impedance-versus-frequency characteristic of the piezoelectric transformer by substracting a resonant-frequency fr from an antiresonant-frequency fa and select the characteristic of the piezoelectric transformer based on the value of the measured bandwidth. The transformer in every figure is in an isolated state in which it is not mounted on a mounted substrate. Onishi's secondary-side generating section is not shown as being in an open state but is short circuited to ground through R1.

It would have been obvious to one having ordinary skill in the art to determine a characteristic of the piezoelectric transformer of Sato et al. and Lejeune, based on the value of the measured bandwidth, determined by substracting a resonant-frequency fr from an antiresonant-frequency fa, as is shown by Onishi, at the time of the Sato

invention, since the "power conversion efficiency of a power conversion device is set to be maximum", as is noted by Onishi.

Claims 4-6, 10-12, 16-18 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 5,424,602) and Lejeune (US 6,269,326) in view of Kawada (US 3,778,648). Given the invention of Sato et al. and Lejeune as noted above, it is not noted by them that they measure or determine the bandwidth of an input-impedance-versus-frequency characteristic of the piezoelectric transformer by subtracting a resonant-frequency fr from an antiresonant-frequency fa and selecting the characteristic of the piezoelectric transformer, comprising the steps of: connecting a primary-side driving section of a piezoelectric transformer to a high-frequency generator; causing said high-frequency generator to sequentially generate and sweep a high-frequency signal over a predetermined frequency range; measuring a resonant frequency (fr) or a resonant resistance (see |Z|) or both of an input-impedance-versus-frequency characteristic of the piezoelectric transformer; he measures or determines the bandwidth of an input-impedance-versus-frequency characteristic of the piezoelectric transformer by subtracting a resonant-frequency fr from an antiresonant-frequency fa and select the characteristic of the piezoelectric transformer based on the value of the measured bandwidth, which is required for determination of his driving frequency. He doesn't note that the transformer is in an isolated state in which it is not mounted on a mounting substrate. It is not known if Kawada's secondary-side generating section is in an open state.

It would have been obvious to one having ordinary skill in the art to determine a characteristic of the piezoelectric transformer of Sato et al. and Lejeune based on the value of the measured bandwidth, determined by subtracting a resonant-frequency fr from an antiresonant-frequency fa, as is shown by Kawada, at the time of the Sato invention, since "the power conversion efficiency of a power conversion device is set to be maximum", as has been noted.

Direct inquiry concerning this action to Examiner Dougherty at (571) 272-2022.

tmd

April 23, 2004

THOMAS M. DOUGHERTY
PRIMARY EXAMINER
GROUP 2800